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18.1220

SOV/180-59-6-4/31

AUTHORS: Bochvar, A.A., Novikov, I.I., and Kholmyanskiy, V.A.
(Moscow)

TITLE: Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System due to Cyclic Temperature Fluctuations

ABSTRACT: It has been shown (Ref 1) that specimens of metals, characterized by cubic crystal lattice and, consequently, being isotropic in respect of the thermal expansion, may nevertheless undergo an irreversible change of their dimensions when subjected to cyclic thermal treatment; the magnitude of these changes, which are an accumulative effect of plastic deformation due to thermal stresses, should depend on the ratio between the magnitude of these stresses and the yield point of the alloy; since the mechanical properties and those physical characteristics upon which depends the magnitude of thermal stresses, change with the composition of the alloy, it follows that, all other factors being equal, the thermally induced dimensional changes of alloys of a given system should be a function of the composition of these alloys, and the

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Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System
due to Cyclic Temperature Fluctuations

object of the present investigation was to study this
relationship in the alloys of the Cu-Ni system. The
experimental specimens, in the form of flat strips
measuring 100 x 20 x 3 mm, were cut from cold-rolled
sheet. One heat treatment cycle consisted in holding the
specimen at the test temperature for 7 min and water
quenching. The length of the specimens was measured
(with accuracy of 0.1 mm) after 25, 50, and 75 cycles.
The results of the first series of experiments, in which
all specimens were quenched from 750 °C, are reproduced
in Fig 1, where the increase in length of the specimen
($\Delta \ell$, %) is plotted against the number, n, of the heat-
treating cycles for the Ni, 25% Cu-Ni, 50% Cu-Ni,
75% Cu-Ni, and Cu specimens (curves 1-5, respectively).
It will be seen that in each case $\Delta \ell$ increased linearly
Card   with n.   The results of the next series of experiments
2/4   are plotted in Fig 2a, where $\Delta \ell$ (after 75 cycles) is
plotted against the composition of the alloy for
specimens quenched from 750 °C (curve 1) and from a
temperature 180 °C higher than the recrystallization

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temperature of the alloy of a given composition (curve 2);
graph a in Fig 2 shows the constitution diagram of the
Cu-Ni system; graph 6 shows the composition dependence
of the recrystallization temperature ($^\circ$C); the curve
shown in graph 4 illustrates the concentration
dependence of σ/k, calculated from the Timoshenko
formula $\sigma = k\, E\alpha/\lambda(1-\mu)$, where σ is thermal stress
in the elastic deformation zone, α is the linear
coefficient of thermal expansion, E is Young's modulus,
λ is heat conductivity, μ is Poisson ratio, k is
proportionality coefficient. Finally, graph 2 shows
the concentration dependence of hardness (kg/mm^2) of the
Cu-Ni alloys. Analysis of the obtained results,
considered in conjunction with the data illustrated in
Figs 2a, 6, 6, 2, led the authors to the conclusion that
the effect of the composition of a solid solution on the
magnitude of the thermally induced, permanent
dimensional changes, can be qualitatively interpreted in
terms of the concentration dependence of the physical and
mechanical properties of the alloys.

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Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System
due to Cyclic Temperature Fluctuations

There are 2 figures and 3 Soviet references.

SUBMITTED: June 29, 1959

Card 4/4

KHOL'NAVA, Ya.A.

Mercury γ-calorimeter. Izv. AN SSSR. Ser. fiz. 25 no.2:257-260
F '61.   (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii
im. D. I. Mendeleyeva.
                          (Calorimeters)

KHOL'NIKOVA, M.I.

PEREL'DIK, D.L.; KHOL'NIKOVA, M.I.

Streptomycin therapy for tuberculosis of the skin. Vest. ven. i
derm. no.1:44 Ja-F '55.   (MLRA 8:4)

1. Iz Dnepropetrovskogo oblastnogo kozhno-venerologicheskogo dispen-
sera.
         (STREPTOMYCIN)   (SKIN--TUBERCULOSIS)

KHOL'NIKOVA, M.I.

Organization of gonorrhea control following treatment. Vest.ven.
i derm. 30 no.2:33-35 Mr-Ap '56.   (MLRA 9:7)

1. Iz Dnepropetrovskogo oblastnogo kozhno-venerologicheskogo
dispansera
        (GONORRHEA, prev. & control
            control organis. after ther.)

CA

3A

1. Crystal γ-spectrometer. Yu. V. Khol'nov. *Uspekhi Fiz. Nauk* 41, 350 89(1950).—Crit. review; 11 references.

KHOL'NOV, Y. V.

Author: Dzhelepov, B. S. , Zhukovskii, N.N. and Khol'nov, Y.V.

Title: γ Irradiation of Ag^{110}.

Journal: Doklady Akademii Nauk SSSR, 1951, Vol.77, No.4, p. 597

Subject: Physics

From: D.S.I.R., Oct. 1951

KHOL'NOV, Yu.

USSR/Physics – Gamma Radiation   11 Sep 52

"Gamma Radiation of Sb^{124}," K. Gromov, B. Dzhelepov, N. Zhukovskiy,
A. Silant'yev, Yu. Khol'nov

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 255-258

By means of the gamma spectrometer that employs the Compton electron, the authors
investigate gamma radiation of subject antimony isotope, under conditions similar
to those of the investigation of gamma spectra of Co^{60} and Ag^{110} in 1951 by the
authors. The source of gamma rays was activated metallic antimony in the amt of
0.7 gram. Discuss exptl curve of current strength in an electromagnet versus
number of coincidences per unit of time. Submitted by Acad P. I. Lukirskiy 2 Jul 52.

235T98

Khol'nov, Yu. V.

USSR .

√ γ-Radiation of iron-59. B. S. Dzhelepov, N. N. Zhukov-skii, and Yu. V. Khol'nov. Doklady Akad. Nauk S.S.S.R. 86, 497-9(1952); Science Abstr. 56A, 733(1953).—Exptl. curves of the γ-radiations of Fe⁵⁹, as detd. with a γ-ray spec-trometer, are shown. The γ-spectrum consists of 2 lines of 1.100 ± 0.011 and 1.278 ± 0.013 m.e.v. energy and 1.39 ± 0.05:1 relative intensity.   K. L. C.

KHOLNOV, YU. V.

USSR/Nuclear Physics - Cu, Gamma Emission

"Gamma Emission of Cu64," B. S. Dzhelepov, N. N. Zhukovskiy, V. P. Prikhodtseva and Yu. V. Kholnov, Radio Inst, Acad Sci USSR

Iz Ak Nauk, Ser Viz, Vol 17, No 4, pp 511-517

Studied in the gamma-spectrum of Cu64 the line h = 1.34 MeV, also observed by F. Kurie and M. Ter-Pogossian (Phys Rev 75, 677 (1948)). Worked with gamma spectrometer, using recoil electrons. Obtained the same results as previously (DAN 86, 497 (1952)). Indebted to A. V. Kudryavtseva, L. N. Zyryanova and V. Chunin. Rec 9 Jul 53.

1. Radiyevyy institut Akademii nauk SSSR.

272 T51

KHOL'NOV, YU.V.

USSR/ Physics - Instruments

Card 1/   Pub. 43 - 5/5

Authors   : Dzhelepov, B. S.; Zhukovskiy, N. N.; and Khol'nov, Yu. V.

Title   : Ritron - gamma-spectrometer utilizing output electrons

Periodical   : Izv. AN SSSR. Ser. fiz. 18/5, 599 - 624, Sep - Oct 1954

Abstract   : The Ritron-magnetic gamma-spectrometer described in this report can be
used for the study of gamma-spectra of radioactive substances with
energies of from 300 - 4000 kev. With respect to resolving power the
instrument was found to be inferior to the gamma-spectrometer with im-
proved focus "Elotron", however, it has a certain advantage over the former,
namely, it utilizes only uniform magnetic fields which makes it possible
to calculate the form of the spectral line, spectral sensitivity, luminosity
and other properties of the instrument. Some results obtained by the appli-
cation of the Ritron-spectrometer are listed. Twenty-seven references:
15 USSR; 1 Canadian; 1 English; 1 Dutch and 9 USA (1927 - 1954). Tables;
diagrams; drawings.

Institution: Academy of Sciences USSR, Radium Institute
Submitted: October 4, 1954

MURIN, Andrey Nikolayevich, professor; KHOL'NOV,Yu.V., redaktor; KISLAREV,
L.A., redaktor; IVANOVA,A.V., tekhnicheskiy redaktor

[Introduction to radioactivity] Vvedenie v radioaktivnost'.
[Leningrad] Izd-vo Leningradskogo univ., 1955. 250 p. (MIRA 9:3)
(Radioactivity)

Khol'nov, Yu. V.

γ-Radiation and decay scheme of lanthanum-140. V. V. Arkhangel'skiĭ, B. S. Dzhelepov, N. N. Zhukovskiĭ, V. P. Prikhodtseva, and Yu. V. Khol'nov, *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* 19, 351–60(1955). The γ-ray spectrum of La₂O₃ irradiated by neutrons was investigated with a ritron γ-spectrometer (cf. *C.A.* 49, 5143c). The energy and the relative intensities are 335 (0.10), 482 (0.41), 822 (0.37), 918 (0.12), 1597 (1.00), 2535 (0.058), >2700 e.kv. (<0.002). The half-life of decay is 40 hrs. From all data a decay scheme is derived.
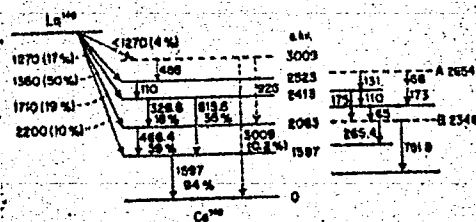
The conversion coeffs. and the abs. intensities of γ-transitions are calcd. The properties and the decay of the radioactive isobars Xe¹⁴⁰, Cs¹⁴⁰, Ba¹⁴⁰, Pr¹⁴⁰, and Nd¹⁴⁰ are discussed. A diagram is drawn on a unitary energetic scale of the levels and transitions in these atoms. The particularly dense packing of Ce¹⁴⁰ is attributed to the presence of a completed 82 neutron shell (magic no.).   G. Pakswer

Khol'nov, Yu. V.

γ-Spectrum of iridium-192. M. P. Glazunov, B. S. Dzhelepov, and Yu. V. Khol'nov. Bull. Acad. Sci. U.S.-S.R., Phys. Ser. 19, (1955).—Engl. translation. See C. A. 50, 1487a

KHOL'NOV   YU V.

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GAMMA RADIATION FROM Au[198]. B. S. Dzhelepov, N. N. Zhukovskii, V. P. Prikhodtaeva and Yu. V. Khol'nov. (Khlopin Radium Inst.). Invest. Akad. Nauk S.S.S.R. Ser. Fiz. 19, 371-6(1955) May–June. (In Russian)

Investigation concerning γ radiation of Au[198] based on two new γ lines of 676 and 1089 Ke and associated β–γ and γ–γ coincidences. Systematic and detailed description of the Au[198] decay scheme is given. 31 references. (R.V.J.)

(3)

KHOL'NOV, Yu. V.

6959
AN ELECTRON RECOIL STUDY OF THE GAMMA SPECTRA
OF ^{124}Sb, ^{59}Fe, ^{110}Ag, ^{64}Cu, ^{192}Ir, ^{140}La, AND ^{198}Au. B. S.
Dshelepov and Yu. V. Hol'nov (Academy of Sciences of the
U.S.S.R., Moscow). Nuovo cimento (10) 3, Suppl. 1, 49-53
(1956). (In English)

An apparatus "riton" used to investigate γ-ray spectra
is described. Energy calibrations were made with γ rays of
accurately known energies and the spectral sensitivity was
checked with the Na^{24} lines. The spectra of the radioactive
substances were investigated and compared with those ob-
tained in earlier experiments. (F.S.)

KHOL'NOV, YU. V

DZHELEPOV, B.S.; PRIKHODTSEVA, V.P.; FEOKTISTOV, A.I.; KHOL'NOV, Yu.V.

Gamma radiation of Zn^{65}. Izv.AN SSSR Ser.fiz. 20 no.12:1359-1360 D '56.

(MIRA 10:3)

1. Radiyevyy institut im. V.G. Khlopina AN SSSR.
(Zinc--Isotopes) (Gamma rays)

KHOL'NOV, Yu.V.

DZHLEPOV, B.S.; PRIKHODTSEVA, V.P.; FEOKTISTOV, A.I.; KHOL'NOV, Yu.V.

Gamma-ray spectra of As^{76}. Izv.AN SSSR.Ser.fiz. 20 no.12:1361-1364
D '56.   (MIRA 10:3)

1. Radiyevyy institut im. V.G.Khlopina AN SSSR.
              (Arsenic--Isotopes) (Gamma rays--Spectra)

KHoL' No 1, V o, V.

120-3-40/40

AUTHORS: Pisarevskiy, A.N. and Khol'nov, Yu. V.

TITLE: The Technique of Nuclear Spectroscopy at the Seventh All-
Union Conference on Nuclear Spectroscopy (Tekhnika
yadernoy spektroskopii na VII vsesoyuznom soveshchanii po
yadernoy spektroskopii)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, Nr 3, pp.118-
120 (USSR)

ABSTRACT: Brief accounts are given of the various instruments des-
cribed at the 7th All-Union Conference on Nuclear Spectros-
copy which took place on 25-31 January 1957 in Leningrad.
1. α-spectroscopy. Relatively few α-spectrometers were re-
ported. Among them were those due to A. P. Komar and B. A.
Bochagov of the Leningrad Physico-Technical Institute and
S. A. Baranov and A. G. Zelenkov of the Institute of Atomic
Energy of the Academy of Sciences of the USSR. Both of
these are ionisation chambers with grids. A magnetic
α-spectrometer was reported by I. I. Agapkin and L. L.
Gol'din.
2. β-spectroscopy. A considerable number of β-spectrometers

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120-3-40/40

The Technique of Nuclear Spectroscopy at the 7th All-Union Confer-
ence on Nuclear Spectroscopy.

has been reported with half-widths ranging from about 0.01%
to 0.5%.
2. γ-spectroscopy. Among these were magnetic γ-spectromet-
ers using recoil electrons, interference spectrometers us-
ing bent crystals, and scintillation spectrometers used in
conjunction with photomultipliers. A complaint is made
about the scarcity of large crystals. A report on the pro-
duction of photomultipliers was given by L. G. Leybeyzon.
The conference unanimously agreed that the absence of
mass-produced photomultipliers with reliable characteristics
makes it very difficult to develop instruments for the de-
tection of nuclear radiations. The same applies to large
spectrometric crystals. There are no figures or references.

ASSOCIATION **Radium Institute imeni V. G. Khlopin of the Academy of
Sciences of the USSR (Radiyevyy Institut im. V. G. Khlopina
AN SSSR)**

SUBMITTED: April 9, 1957.

AVAILABLE: Library of Congress.

Card 2/2   1. **Nuclear spectroscopy-Conference**   2. **Spectrometers**   3. **Crystals**

Khol'nov Yu. V.

48-7-11/21

AUTHORS: Golovanov, I.B., Dzhelepov, B.S., Lebedev, L.S., Prikhodtseva, V.P., Khol'nov, Yu.V.

TITLE: The γ-Spectrum of In^{114*} (γ-spektr In^{114*})

PERIODICAL: Izvestiya Akad. Nauk SSSR, Ser. Fiz., 1957, Vol. 21, Nr 7, pp. 985 - 986 (USSR)

ABSTRACT: The relative intensities of the γ-rays of the 49 days In^{114*} were determined by means of a "ritron" under new test conditions. The figure shows the distribution of the emission electrons according to $H\rho$ (after drawing off the background). The peak values corresponding to the 4 γ-lines of In^{114*} 191, 556, 772 and 1300 keV are distinctly to be seen. It has to be noted that in the study of the γ-spectrum of In^{114*} for the first time, by means of the "ritron", a γ-line - 191 keV so soft for this apparatus was investigated. In this domain of energy we did not possess any point on the curve of the spectral sensitivity. In order to obtain this point, the authors used the preparation of In^{114*}. The course of the investigation is fully described and explained. The separation of the spectrum was carried out by means of the standard individual lines. The re-

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KHOL'NOV, YU.V.

ACHIEVEMENTS IN NUCLEAR SPECTROSCOPY. Yu.V. Khol'nov. Vestnik Akad. Nauk S.S.S.R. 27, No. 5, 105-7 (1957) May. (In Russian)

Developments in theoretical and experimental nuclear spectroscopy were discussed during the conference of the Academy of Science, Physico-Mathematical Dept., in Leningrad, Jan. 25-31, 1957. (R.V.J.)

DZHELEPOV, Boris Sergeyevich; PEKER, Leon Kaufmanovich; KHOL'NOV, Yu.V.,
    otv.red.; PEVZNER, R.S., tekhn.red.

    [Decay schemes of radioactive nuclei] Skhemy raspada radioaktivnykh
    iader. Moskva, Izd-vo Akad. nauk SSSR, 1958. 784 p. (MIRA 11:12)
                    (Nuclei, Atomic--Decay)

AUTHOR: Khol'nov, Yu. V., Candidate of 30-58-4-21/44
     Physical and Mathematical Sciences

TITLE: New Works in the Field of Nuclear Spectroscopy
    (Novyye raboty v oblasti yadernoy spectroskopii)
    All-Union Conference (Vsesoyuznoye soveshchaniye)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, . Nr 4,
     pp. 102-103 (USSR)

ABSTRACT: The Department for Physical and Mathematical Sciences
    arranged the 8th All-Union conference on nuclear
    spectroscopy in Leningrad from January 27 till February
    3. More than 700 Soviet specialists as well as guests
    from China, Bulgaria, the DDR, Poland, Roumania,
    Czechoslovakia, France and Yugoslavia took part in it.
    The main topic was the problem of the structure of
    atomic nuclei, one of the most important problems of
    physics. The works were carried out by means of the
    home-produced precision spectrometers in the course
    of the last years. New model representations of the
    nucleus were developed. In this field works were carried
Card 1/3 out devoted to the decay scheme of neutron-deficient

New Works in the Field of Nuclear Spectroscopy   30-58-4-21/44
All Union Conference

isotopes of rare earths. These isotopes are produced
as result of reactions in the synchro-cyclotron at the
United Institute for Nuclear Research and then are
investigated in spectroscopic laboratories. The spectra
of conversion electrons, positrons, γ-rays of neutron-
deficient isotopes of lutetium, thulium, erbium and
others have already been investigated. Besides the
works carried out by means of scintillation spectrometers
also works by means of a double magnetic lens spectrometer
were reported. By this method the isotopes Tb^{155}, Lu^{173},
Eu^{174} and others were investigated. The obtained results
make it possible to draw some conclusions as to the
rules governing the arrangement of the nuclear levels.
A number of works were devoted to the investigation of
the decay schemes of La^{140}, As^{74}, Se^{75}, Mo^{99}, Cs^{134},
Au^{199}, Dy^{161} and others. The reports on the α-decay
problem also show success in this field, a general
theory of decay for all nuclei has, however, not yet
been developed. Several reports touch the problem of

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New Works in the Field of Nuclear Spectroscopy   30-58-4-21/44
All-Union Conference

the interaction type in the β-decay. One meeting was devoted to the γ-radiation, the conversion, as well as to the nuclear isomerism; here a further development of the theory of internal conversion could be found. Very important experiments on the Coulomb nuclear excitation are being carried on. It was regretted that the quality of the domestic crystals and photomultipliers do not satisfy demands.

1. Neutron spectroscopy—USSR

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KHOL'NOV, Yu. V.

PRIKHODTSEVA, V.P.; KHOL'NOV, Yu.V.

Gamma spectrum of La^{140}. Izv. AN SSSR. Ser. fiz. 22 no.2:176-178
F '58.
(MIRA 11:4)

1. Radiyevyy institut im. V.G. Khlopina AN SSSR.
         (Lanthanum--Isotopes)   (Gamma rays)

KHOL'NOV, Yu. V.

AUTHORS: Grigor'yev, Ye. P., Zhelepov, B. S., Zolotavin, A. V., Kishin, V. I., Prikhodtseva, V. P., Khol'nov, Yu. V., Shestakov, G. Ye.

TITLE: Radiation from Lu^{174} (Izlucheniye Lu^{174})

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 7, pp. 831-838 (USSR)

ABSTRACT: In December 1957 the authors obtained a radiochemically pure preparation of Lu^{174} (~4 mCu) with a good specific activity. The characteristic features of this decay were examined and precisely determined. First the production of the preparation is described. This Lu^{174} was produced by a bombardment of erbium with deuterons with an energy of 10.6 MeV. The results of the investigation of β-, and γ-spectra are exposed. It is proved that the ground state of Lu^{174} is of an 2$^-$-type. After the "hyper" (G,γ) spectra had been subtracted the Curie diagram for the soft components of both spectra proved to be rectilinear. In the background of the β-spectrum the K- and $(L+M)$ conversion-lines of the transitions of 596 and 635 keV are clearly marked. The $K-635$ line is, without doubt,

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a transition of the type 2 $\longrightarrow$ 0'. With the $hf-596$ keV transition, which is connected with the positron branch, conditions are more complicated, as the proportion of the K-capture must be known in order to be able to determine. Two methods of the determination of Lu^{174} are given. The spectrum of the γ-radiation of Lu^{174} was investigated by means of the recoil electrons. The relative intensity of three γ-lines was investigated with an equipment of a better resolution. The manifold $hf-596$ line, at $hf-596$ and the 635 keV line. With the help of an equipment of a lower resolution, but of a luminous intensity amplified by the hundredfold, it was attempted to find harder γ-lines in the radiation of Lu^{174}. The decay energy in the transmission from $Lu^{174} \longrightarrow Hf^{74}$ are excited up to those of 2500 keV. Actually in the spectral range of 1200 keV presumed superposition of the counting rate above the quiet background compared with the softer lines is observed. The intensity of this line is smaller by a factor of 10^3 than that of the annihilation line. It is shown that in Hf^{174} the second level of excitation probably has an energy of 1200 keV. If this is true, it should be expected that a transition from the second level to the first one of

Card 2/4

Radiation from Lu^{174}

about 600 keV exists and that this level forms a doublet with the 596 keV line. The ramifications in the decay scheme of Lu^{174} are investigated. In the last chapter some remarks concerning the individual levels are given. As regards the conversion of the transition at $hf-596.5$ keV of Hf^{174} it is shown that in this transition the ratio K/L in the Lu^{174} decay K/L for this transition is normal. The level at 1200 keV of Co^{60} is probably a second vibration level with the characteristic 2. The second excited level of 3.4 in probably near 1300 keV and is of the type 2. J. M. Layer, I. P. Selinov, Ye. Ye. Baroni, Yu. N. Khoprov and their were collaborated in the work. There are 5 figures, 3 tables, and 15 references, 8 of which are Soviet.

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21(7)   SOV/2o-121-6-11/45
AUTHORS: Dzhelepov, B. S.,   Corresponding Member, Academy of Sciences,
                USSR, Prikhodtseva, V. P., Khol'nov, Yu. V.

TITLE: The $0^+ \to 0^+$-Transition in Ce^{140} ($0^+ \to 0^+$-perekhod v Ce^{140})

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 6, pp 995-997
                (USSR)

ABSTRACT: By some authors the following problem was raised: Do the
                conversion electrons K-1909 ($\sim$1909 keV) correspond to the
                transition between the excited state (1909 keV, quantum
                characteristics 0^+) and the ground state (also 0^+) ? In
                order to solve this problem, the authors carefully investi-
                gated the γ-spectrum of La^{140} in the energy region of
                $\sim$1900 keV. Lanthanum oxide irradiated by thermal neutrons
                was used as a source. The original activity of the preparation
                was 2,8 Cu. The results of the measurements are given in a
                diagram. No γ-line is observed in the energy region 1800-2000
                keV. The intensity of the γ-rays $\sim$1900 keV (if they exist
                at all) is less than 4.10^{-4} quanta per disintegration. These
Card 1/3   data (together with the data of two previous papers (Refs 1, 2)

concerning the intensity of the conversion line 1909 keV)
enable us to conclude that there is a $0^+ \rightarrow 0^+$-transition.
In order to confirm the existence of the line K-1909, and
for a more accurate determination of its intensity, the
authors investigated the hard part of the spectrum of the
conversion electrons of La^{140} by means of 2 spectrometers
of the ketron type. These spectrometers were placed at the
authors' disposal by A. A. Bashilov, Leningradskiy univer-
sitet(Leningrad University) and K. Ya. Gromov, Radiyevyy
institut AN SSSR (Radium Institute AS USSR). La^{140} was used
as a source in both of these cases. According to the results
given in a diagram, the existence of the lines K- and L-1909
is beyond any doubt. The transition has the average energy
1902 keV, and the ratio of the intensities K_{1902}/K_{1596} is

equal to 0,220,(i.e. the average value of all the measurement
series). For the lower limit of the conversion coefficient
of the transition 1902 keV the value $\alpha_{K-1902} > 0,38$ was
found.
This leads to the conclusion that the transition with the
energy 1902 keV in Ce^{140} is the hitherto unknown transition
$0^+ \rightarrow 0^+$. Besides, the authors sought and found the K- and

Card 2/3   L-conversion lines which correspond to the γ-lines 2343 and

The $0^+ \rightarrow 0^+$-Transition in Ce^{140} SOV/20-121-6-11/45

2390 keV and to the γ-line 2515 keV. A table gives the ex-
perimental and the theoretical conversion coefficients on the
K-shell for the transitions discussed in this paper. The
authors thank A. A. Bashilov and K. Ya. Gromov (who made
it possible to carry out the control experiments by means
of their spectrometers), N. D. Novosil'tseva for the chemi-
cal separation of La^{140} from a barium solution, and also A. G.
Dmitriyev and Yu. A. Gur'yan for their help in carrying out
measurements. There are 3 figures, 1 table, and 6 references,
5 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
             (Radium Institute imeni V. G. Khlopin, AS USSR)

SUBMITTED: June 30, 1958

Card 3/3

DZHELEPOV, B.S.; KHOL'NOV, Yu.V., kand.fiz.-mat.nauk, otv.red.;
SEMENOVA, Ye.A., red.izd-va; SMIRNOVA, A.V., tekhn.red.

[Isobaric nuclei with a mass number of A=74] Izobarnye
iadra s massovym chislom A=74. Moskva, Izd-vo Akad.nauk
SSSR, 159. 39 p. (Svoistva atomnykh iader, no.1).

(MIRA 12:11)

1959,   (Isobars, Nuclear)

DZHELEPOV, B. S., KHOLNOV, Yu. V., PRIKHODTSEVA, V.P.

"A $0^+ \rightarrow 0^+$ Transition in Ce^{140}.", Nuclear Physics, vol. 9, 4, 1959, pp.665-669

(No. Holland Publ. Co., Amsterdam)

Radium Inst, im V.G. Khlopin, Acad. Sci, USSR, Leningrad.

A search has been made for gamma-guanta of energy $\approx$1900 keV in the spectrum of La^{140} by means of a gamma-spectrometer by analysis of recoil electrons. It is shown that is such exist, their intensity is $< 0.4 \times 10^{-3}$ quantum per disintegration. It is simultaneously confirmed that the spectrum of conversion electrons contains intense conversion lines corresponding to a transition energy of 1902 keV.

The lower limit of the conversion coefficient of this transition proved equal to 0.38. Such a large value of this limit indicated that it is either a transition of high multipole order ($z > 10$), or a $0^+ \rightarrow 0^+$ transition in which gamma quanta of the given energy are entirely absent. The first assumption may be discarded since in this case the lifetime of the 1900 keV state should be very great ($>10^{10}$ years), whereas the intensity of the corresponding conversion line falls off with a halflife of $\approx$ 40 hours. We are thus dealing here with a new $0^+ \rightarrow 0^+$ transition.

The paper also discusses the characteristics of several other transitions in Ce^{140}

21(7)

SOV/48-23-2-7/20

AUTHORS: Dzhelepov, B. S.,   Prikhodtseva, V. P.,   Khol'nov, Yu. V.

TITLE: γ-Spectrum of J^{131} (γ-Spektr J^{131})

ABSTRACT: The authors investigated the γ-spectrum of J^{131} within the range of 200-800 kev, determined the intensities of well known γ-lines and the γ-line with 514 kev, of which mention is made in paper (Ref 2). The results of these investigations are contained in a figure. For the intensities of γ-lines the following values were obtained:

E_γ kev:	278	362	514	633.5	722
I_γ % :	5.7	100	< 0.4	8.9	1.9

In addition, a special investigation has shown that the intensity of the γ-line with 514 kev never exceeds 0.4% of the intensity of the γ-line with 362 kev. The authors thank V. A. Yeliseyev for help in the measurements. There are 11 figures and 2 references, 1 of which is Soviet.

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γ-Spectrum of J^{131} SOV/48-23-2-7/20

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
             (Radium Institute imeni V. G. Khlopin of the Academy of
             Sciences, USSR)

Card 2/2

21(7)

AUTHORS:

Dzhelepov, B. S., Yeliseyev, V. A., Prikhodtseva, V. P., Khol'nov, Yu. V.

TITLE: γ-Radiation of Br^{82} (γ-Izlucheniye Br^{82})

ABSTRACT: The γ-spectrum was studied by means of the "Rytron" spectrometer. It is given in figure 1. 10 lines were detected. The energies and relative intensities obtained in this and another paper are listed in a table for comparison. The best accordance resulted from reference 8, both for energies and intensities. Within the range 1700-2000kev a weak line at 1780 kev and only one elevation of a point above the background at 1910 kev were found. Within the range 2000-2700 kev no lines with an intensity above 0.2% were found. The conversion coefficient of the main transitions in Br^{82} was determined by means of the intensities obtained. The initial value of α_K for the transition type E2 of transition 777 kev in Kr^{82} was adopted from tables published by Sliv and Band (Ref 13) with an amount of $8.22 \cdot 10^{-4}$. A decay scheme of $Br^{82} \longrightarrow Kr^{82}$ is given in figure 2. The transition types of the individual transitions

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γ-Radiation of Br^{82} SOV/48-23-2-8/20

of Kr^{82} were determined according to a comparison of the theoretical α_K values with the experimental ones (Table 2).

The lines 1648 and 1780 kev detected for the first time as levels are not given in the decay scheme. There are 2 figures, 2 tables, and 13 references, 3 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin of the Academy of Sciences, USSR)

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24(5),24(7)

AUTHORS: Dzhelepov, B. S., Prikhodtseva, V. P.,   SOV/48-23-7-7/31
                  Khol'nov, Yu. V.

TITLE: The γ-Emission of Cs^{134} (γ-izlucheniye Cs^{134})

ABSTRACT: The object of the measurements carried out by a magnetic
                  spectrometer was the determination of the relative intensity
                  of the γ-lines. The measurement results are shown in two dia-
                  grams, the half-width of the lines in the range of 1 Mev is
                  indicated with 3.3 %, and the intensities of the lines are
                  compared. The half-width of the lines could be reduced by a
                  better focusing to 1.6 %. The results of this investigation,
                  the energy and the relative intensity of the γ-lines of Cs^{134}
                  are finally compiled. The authors thank V. A. Yeliseyev and
                  A. Ushakow for the execution of the measurements, and
                  N. N. Zhukovskiy for making possible the measurements by the
                  elotron. There are 1 figure, 1 table, and 11 references, 4 of
                  which are Soviet.

Card 1/2

The γ-Emission of Cs^{134} SOV/48-23-7-7/31

ASSOCIATION: Radiyevyy institut imeni V. G. Khlopina Akademii nauk SSSR
                (Radium Institute imeni V. G. Khlopin of the Academy of
                Sciences, USSR)

Card 2/2

DZHELEPOV, B.S.; DRANITSYNA, G.F.; KHOL'NOV, Yu.V., kand.fiz.mat.nauk,
    ovt.red.; SEMENOVA, Ye.A., red.izd-va; ZAMARAYEVA, R.A., tekhn.
    red.

[Systematics of β-disintegration energies] Sistematika energii
    β-raspada. Moskva, Izd-vo Akad.nauk SSSR, 1960. 60 p.
(Svoistva atomnykh iader, no.3)   (MIRA 13:7)
            (Beta rays--Decay)

DZHELEPOV, B.S.; ZHUKOVSKIY, N.N.; KHOL'NOV, Yu.V., kand.fiz.-mat.nauk;
ovt.red.; KAL', M.M., red.izd-va; ZAMARAYEVA, R.A., tekhn.red.

[Isobaric nuclei with an atomic number of 110] Izobarnye iadra
s massovym chislom A = 110. Moskva, Izd-vo Akad.nauk SSSR, 1960.
72 p. (Svoistva atomnykh iader, no.4).   (MIRA 13:11)
                    (Isobars, Nuclear)

DZHELEPOV, B.S.; PRIKHODTSEVA, V.P.; KHOL'NOV, Yu.V.; BARKOVSKIY, I.V.,
red.izd-va; BOCHEVER, V.T., tekhn.red.

[Isobaric nuclei with a mass number of 140] Izobarnye iadra s
massovym chislom A=140. Moskva, Izd-vo Akad. nauk SSSR, 1960.
97 p. (Svoistva atomnykh iader, no. 5.)   (MIRA 14:2)
              (Isobars, Nuclear)

80639

S/048/60/024/03/08/019
B006/B014

24.6720
24.6810

AUTHORS: Dzhelepov, B. S., Khol'nov, Yu. V.

TITLE: The Gamma Spectrum of Eu^{152,154} in the Energy Range
             245 ÷ 500 and 1,450 ÷ 2,000 kev

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
             Vol. 24, No. 3, pp. 300 - 303

TEXT: The article under review was read at the Tenth All-Union Confer-
ence on Nuclear Spectroscopy (Moscow, January 19 - 27, 1960). The
authors studied the γ-spectrum by means of a magnetic γ-spectrometer
(rytron). A mixture of Eu^{152} and Eu^{154}, whose total activity amounted
to about 800 millicuries, served as source. The activity ratio between
E^{154} and E^{152} was estimated as being 0.21±0.03. The results obtained are
reproduced in two diagrams and a table. The following lines were detected
(the first figure denotes the respective energy of the line, while the
following figure in parentheses denotes the relative intensity referred to
the 344-kev line): 245 kev (35 ± 4); it consists of two lines which were

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00639

The Gamma Spectrum of $Eu^{152,154}$ in the Energy   S/048/60/024/03/08/019
Range 245 ÷ 500 and 1,450 ÷ 2,000 kev   B006/B014

inseparable in these investigations: 244.7 kev (Eu^{152}) and 248 kev (Eu^{154}).
B. V. Bobykin and K. M. Novik showed that the intensity ratio of these two
lines equals 21.1 : 5.9. Hence, the Eu^{152} line yields the largest fraction.
344 kev (100). 440 kev (detected by N. N. Zhukovskiy). It corresponds to
the conversion lines 411.23 and 444.23 (Ref. 6). The authors of this
article recorded 415±4 kev (10.1±2) and 450±4 (11.4±2). The intensity
sums of these two lines are in good agreement with that calculated by
Zhukovskiy for the 440-kev line. 496±10 kev (2.6±1): This line was
observed by the authors for the first time. It corresponds to a
transition between the levels 1,577 and 1,088 kev (489-kev transition)
or between 1,533 and 1,050 kev (483-kev transition) of Eu^{152}. Also
1,526 ± 15 kev (1.2±0.3) was observed for the first time. It may be
assumed that it results from a direct transition from the 1,533-kev level
(2⁻) to the ground level (0⁺). 1,600 kev (described in Ref. 7). 1,610 ± 7
kev (1.6±0.2): no further details available on this line. Besides the
spectrum of recoil electrons, Fig. 2 also contains the decay schemes for
Eu^{152} and Eu^{154} as published by Zhukovskiy. No lines with relative
intensities >0.1 could be found in the range 1,670 - 2,000 kev. Finally,

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The Gamma Spectrum of $Eu^{152,154}$ in the
Energy Range 245 ÷ 500 and 1,450 ÷ 2,000 kev

S/048/60/024/03/08/019
B006/B014

the authors thank A. Ushakova and V. Rumyantsev for their assistance
rendered in measurements. There are 2 figures, 1 table, and 7 references,
4 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
                (Radium Institute imeni V. G. Khlopin of the Academy of
                Sciences, USSR)

Card 3/3

S/048/60/024/03/10/019
B006/B014

24.6720

AUTHORS: Dzhelepov, B. S., Rumyantsev, V. L., Khol'nov, Yu. V.,
             Shchukin, G. Ye.

TITLE: The Gamma Spectrum of W^{187}

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1960,
             Vol. 24, No. 3, pp. 311-312

TEXT: The article under review was read at the Tenth All-Union Confer-
ence on Nuclear Spectroscopy (Moscow, January 19 - 27, 1960). The
authors studied the γ-emission of W^{187} by means of a magnetic γ-spectro-
meter (rytron); three series of measurements were made with a source of
about 1,000 millicuries. The total spectrum of recoil electrons is
illustrated. The measured energies and the relative intensities referred
to the intensity of the 488-kev line are compiled in a table. The
following lines (in kev) - the respective intensities are given in
parentheses - were detected: 488 (100), 558 (22.5$\pm$1.7), 622 (31.2$\pm$2.5),
691 (119$\pm$7), 778 (22.2$\pm$1.5), 864 $\pm$ 9 (1.4 $\pm$ 0.3), 891 $\pm$ 9 (1.1 $\pm$ 0.3).

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The Gamma Spectrum of W^{187}

S/048/60/024/03/10/019
B006/B014

These results are compared with those obtained by Mueller et al. and Dubey et al. No γ-lines with intensities >0.3 per cent of that of the 488-kev line could be observed in the range $950 \pm 1,350$ kev. There are 1 table and 6 references, 1 of which is Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin of the Academy of Sciences, USSR)

Card 2/2

S/048/60/024/007/022/032/XX
B019/B056

24.6720
AUTHORS: Voinova, N. A., Dzhelepov, B. S., Zhukovskiy, N. N., and
            Khol'nov, Yu. V.

TITLE: The γ-Emission of Tb^{160} /9

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
            Vol. 24, No. 7, pp. 852-857

TEXT: This paper was read at the 10th All-Union Conference on Nuclear
Spectroscopy, which took place from January 19 to January 27, 1960 at
Moscow. The γ-emission of Tb^{160} was investigated by means of two γ-spectro-
meters, which evaluate the recoil electrons of the rytron and the elotron;
their source was 0.146 g terbium oxide with an activity of roughly
800 millicuries. By means of the rytron, the spectrum was investigated
according to the photoelectrons within the energy range from 80 to 300 kev;
as a converter, a bismuth target was used. From 200 to 1700 kev the spec-
trum was investigated according to the recoil electrons under conditions
that are normal for a rytron and an elotron. In Fig. 1 the photoelectron
spectrum, obtained by means of the rytron, in Fig. 2 the recoil electron

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The γ-Emission of Tb^{160} 　　　　　 S/048/60/024/007/022/032/XX
　　　　　　　　　　　　　　　　　　　　　　　 B019/B056

spectrum, obtained by means of the elotron, and in Fig. 3 the recoil
electron spectrum, obtained by means of the rytron is shown. In the Table,
the energies and the relative intensities of the lines obtained by the
authors are given. In the first column of the Table, the lines are number-
ed, in the second, the energies are given in kev, and in the third column
the relative intensities (elotron, recoil electron), in the fourth column
the relative intensities (rytron, recoil electron), and in the fifth
column the relative intensities (rytron, photoelectron) are given. In the
further columns, values obtained by Ye. Grigor'vev et al. (Ref. 4),
Bäckström (Ref. 5), Jaffé (Ref. 6), Thiry (Ref. 7), Nathan (Ref. 8),
Clark and Knowles (Ref. 9), Ofer (Ref. 10), and Clark (Ref. 11) are given.
All lines measured are in the decay scheme of Tb^{160} shown in Fig. 4.
There are 4 figures, 1 table, and 11 references: 3 Soviet, 4 US, 2 British,
1 Canadian, and 1 Swedish.

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　　　　　　　 (Radium Institute imeni V. G. Khlopin of the Academy of _____.
　　　　　　　 Sciences, USSR)

Card 2/2

26.2246

AUTHORS: Dzhelepov, B. S., Khol'nov, Yu. V.

TITLE: Photorhytron

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,
            no. 1, 1961, 98-105

TEXT: A study has been made of the applicability of the rhytron in the
range of smaller energies. The rhytron dealt with here is a magnetic gamma
spectrometer of the Radiyevyy institut (Radium Institute). In the spectra
of a great number of isotopes there are, in fact, many gamma lines in the
very range of low energies. The main problem discussed is the
determination of such conditions as are required if the photoeffect shall
be used with any advantage. While a large cross section of the photo-
effect augments the spectral sensitivity, there are several factors acting
against this. The device used, which the authors had earlier worked out
(Ref. 1), is illustrated in Fig. 1. A 50 μ thick cellophane cover was
mostly used as a target when working with recoil electrons. Lead and

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S/048/61/025/001/017/031
B029/B060

Photorhytron

bismuth targets served for the experiments with photoelectrons. The spectrum of the photoelectrons ejected by gamma rays with $\hbar\omega$ = 122, 244, and 345 kev was examined with three targets: Pb(13.5 mg cm^{-2}), Bi(7.5 mg cm^{-2}), and Bi(3.7 mg cm^{-2}). Figs. 2, 3, 4 illustrate the respective results. The three lines L122, K244, and K345 are clearly visible. Figs. 3 and 4 show the relative half-width of the lines on the peak height (above the "Compton" tail) as a function of the thickness of the target. The authors selected a thickness of the bismuth target at which the efficiencies of the rhytron working with photoelectrons and Compton electrons are about the same in the ~350-kev energy range. The following section of the present article deals with the form of spectral lines. Fig. 5 shows the spectra of electrons ejected by gamma rays with the energies 100(Sm^{153}), 145(Ce^{141}), 190(In^{114}), 280(Hg^{203}), 411(Au^{198}), and 660 kev (Cs^{137}). Fig. 6 shows the dependence of the relative half-width of K and L lines and, for a comparison, the same curve for the Compton lines. The considerable improvement of resolution in the case of the photorhytron is evident. Fig. 7 shows the dependence of the K/L ratio upon the energy of the gamma quanta. The following two sections deal with

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B029/B060

Photorhytron

the energy calibration of the spectrometer and the more difficult
intensity calibration. The energy of gamma quanta can be determined
within an accuracy of ~0.5. The application of the device under new
experimental conditions is illustrated in Fig. 10 by the example of the
spectrum taken thereby of photoelectrons ejected by the gamma rays of Tb.
The use of photoelectrons in the rhytron made it possible to (1) extend
the working range of this gamma spectrometer considerably, namely, up to a
~60-kev energy of gamma rays; (2) highly improve the resolution of the
device at low energies; (3) improve the ratio height of photopeaks/Compton
background as compared with other spectrometers making use of photo-
electrons. Ye. A. Kholnova and the students A. Ushakova, V. Rumyantsev,
Ye. Vinogradova, as well as E. Arutyunyan and G. Shchukin are thanked for
their help in the measurements. The article under consideration is the
reproduction of a lecture delivered at the 10th All-Union Conference on
Nuclear Spectroscopy which took place in Moscow from January 19 to 27,
1956. There are 10 figures and 3 Soviet-bloc references.

Radium Inst im. N.G. Khlopin AS USSR

Card 3/4

S/048/61/025/002/007/016
B117/B212

AUTHORS: Voinova, N. A., Dzhelepov, B. S., Kholnov, Yu. V.

TITLE: Gamma radiation of Ta^{182}

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,
              no. 2, 1961, 233-236

TEXT: The present paper was read at the 11th Annual Conference on Nuclear
Spectroscopy (Riga, January 25 to February 2, 1961). The authors have in-
vestigated the gamma spectrum of Ta^{182} in a wide energy range by using a
"ritron" and "photoritron". The source was a 2.8 g tantalum foil activated
by neutrons. Its activity amounted to about 2 curies. Fig. 1 shows the
photoelectron spectrum of a bismuth target that had been bombarded with
gamma rays of Ta^{182}, recorded by means of the photoritron. The relative
intensities of soft gamma rays are given in the last column of the table;
they have been determined from the relative intensity of the photopeaks.
The correction for the absorption of gamma rays have been made in the source
and in the input slit. Besides, also the sensitivity of the instrument was

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Gamma radiation of Ta^{182}

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B117/B212

considered on these corrections. Composite lines are separated into singular components with the help of standard lines. The results obtained agree well with data given in Refs. 3 and 5, but differ very much from those given in Refs. 4 and 6. The hard region of the spectrum was investigated by means of a ritron. After the corrections had been introduced, the intensities of the hard lines were determined (Table). The resolution of the ritron, however, was not high enough to separate the gamma lines, as was done in Refs. 1 and 2. Therefore, the intensities of the hard lines determined with standard lines are not as accurately given as those in Refs. 1 and 2. Special attention had been paid to investigate the spectral region around 1,600 kev. It was found that in this region the number of coincidences does hardly exceed the background. The results of the study showed that if 1608.5-kev gamma quanta exist, their maximum intensity amounts to 0.05% of the 1121.6-kev line intensity. There are 3 figures, 1 table, and 10 references: 5 Soviet-bloc.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
               (Radium Institute imeni V. G. Khlopin of the Academy of
               Sciences USSR)

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Gamma radiation of Ta^{182}

Legend to the table:
1) transition energy, kev;
2) relative intensities according to Müller, Murray, Bachström, O. Sumbayev, Fröman & Ryde, N. A. Voinova, V. D. Vitman and own measurements (last column).

Энергия перехода, keV	Мюллер и др. [3] (1952)	Мюррей и др. [4] (1955)	Бенстрём [7] (1956)	Стробаев [5] (1957)	Фрёмен и Радде [6] (1957)	Воинова и др. [1] (1959)	Пятман и др. [2] (1961)	Наши данные
85,71	2,6	7,5	—	—	} —	—	—	—
67,74	28,4	85	—	—	130	=	—	—
84,67	1,7	5	—	—	(7)	—	—	—
100,09	13,1	40	—	—	52	—	—	15±7
113,66	2,6	7,5	—	—	} (8)	—	—	—
116,40	0,4	1,7	—	—		—	—	—

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Gamma radiation of Ta^{182}

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B117/B212

152,41	12,5	35	—	18,2	} 39 (29)	—	—	} 18±4 / 3
156,37	4,0	11,5	—	7,2	(10)	—	—	
179,36	5,4	16	—	8,7	(12)	—	—	3±1
198,31	2,6	7,5	—	4,5	} 39 (6)	—	—	—
222,05	12,8	35	—	21,4	(25)	—	—	} 19±3
229,27	6,8	20	—	9,8	(14)	—	—	
264,09	7,7	22	—	9,1	12	—	<0,5	8±1
892,4	—	—	—	—	—	<1,4	—	—
927	—	—	—	—	—	3±2	—	—
960	—	—	—	—	—	2,5±1,5	—	—
1003	—	—	—	—	—	9±3	5±2	—
1046	—	—	—	—	—	—	0,9±0,9 / 0,6	—
1121,6	100	100	100	100	100	100	100	100
1155	—	6,5	—	7,1	—	<4	3,6±1,0	—
1189,4	44,6	45	—	56,8	~21	45±8	44±3	43
1220,0	} 95	95 } 145	—	} 161	} 112,5 (75)	84±8	80±6 } 105±8	} 118
1231		50	—		(37,5)	35±10	25±5	
1254	—	—	4	—	—	6±2	4±1	—
1275	—	—	3	—	—	3±2	—	~4
1290	—	—	2	—	—	5±2	—	~4
1331	—	—	—	—	—	<0,6	—	(~1,5)
1375(+1388)	—	—	<0,3	—	—	<1,4	—	~2
1437	—	—	<0,3	—	—	<0,05	—	(~0,6)
1454	—	—	<0,3	—	—	—	—	(~0,4)
1608,5	—	—	—	—	—	—	—	<0,05

Card 4/4

DZHELEPOV, Boris Sergeyevich; PEKER, Leon Kaufmanovich; SER EYEV,
  Viktor Olegovich; KHOL'NOV, Yu.V., otv. red.; BARKO SKIY,
  I.V., red.izd-va; SMIRNOVA, A.V., tekhn.red.

  [Decay schemes of radioactive nuclei at $A \gg 100$] khemy ras-
  pada radioaktivnykh iader $A \gg 100$. Moskva, Izd-vo AN SSSR,
  1963. 1958.p.   (MIRA 16:11)
     (Radioactive substances—Decay)

S/048/63/027/002/003/023
B104/B180

AUTHORS: Arutyunyan, E. A., Khol'nov, Yu. V., and Shchukin, G. Ye.

TITLE: The possibility of using a toroidal sector magnetic field in γ-spectrometry

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 2, 1963, 177-181

TEXT: A paired spectrometer with axial symmetry (Fig. 1) is suggested for gamma-ray spectrometry. A toroidal field of the $H = H_0/r$ type is suggested as solid angles of up to 19% of 4π can be used with it in β-spectrometry. The electrons may be focused in sequence in the two symmetrically arranged toroidal sector spectrometers. The method was checked with the spectrometer of the Radium Institute AS USSR. Both toroidal spectrometers have six gaps arranged symmetrically with respect to the axis S-1-2. The investigations were conducted with a Zn^{65} γ-source and only one gap. Results show that the aperture ratio is,

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The possibility of using ...

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B104/B180

more than 2.34 times that of the "ritron" (with uniform magnetic field).
(B. S. Dzhelepov et al., Izv. AN SSSR. Ser. fiz., 18, 599, 1954; 20, 1361,
1956) If all gaps were be used the aperture ratio would be 14 times
greater. The first drawback to the method is that the electron
trajectories are not exactly known, so the target could not be accurately
adjusted. The second is the high background (up to 30%). The first
could be eliminated by using an additional magnetic field near the source
for collimating the γ-beam, and the second by using an iron free
spectrometer. There are 2 figures.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
                (Radium Institute imeni V. G. Khlopin of the Academy of
                Sciences USSR)
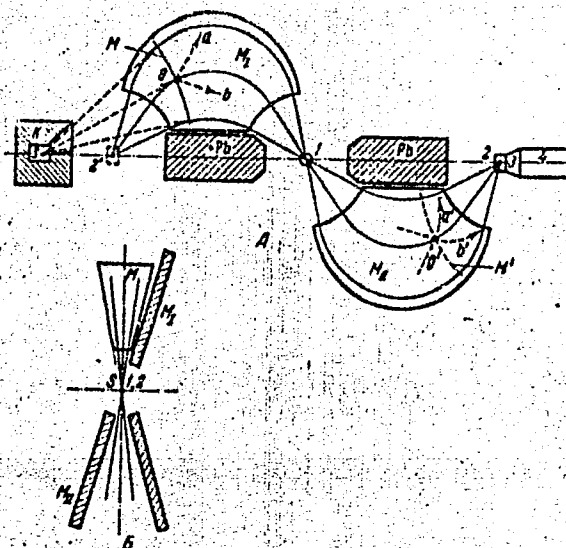
Fig. 1. Diagram of the apparatus.
Legend: (A) Horizontal; (B) Vertical; (K) Collimator; (S) Source;
(M) Target; (M_I) First magnet; (M_{II}) Second magnet; (1) Geiger counter;
(2) Scintillation counter; (3) Light pipe; (3) Photomultiplier;
(5) (M') Target picture.
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The possibility of using ...

Fig. 1

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L 01292-66   EWT(l)/EPF(n)-2/EWG(m)/EPA(w)-2   IJP(c)   AT

ACCESSION NR: AP5021732   UR/0386/65/002/002/0079/0083

AUTHOR: Fedyanin, O. I.; Khol'nov, Yu. V.

TITLE: Effect of toroidal drift on the injection of plasma across a magnetic field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 2, 1965, 79-83

TOPIC TAGS: plasma physics, plasma magnetic field, MHD flow

ABSTRACT: Experiments were conducted for studying the motion of a plasma in a toroidal magnetic field. A toroidal stainless steel vacuum chamber was used (major diameter 120 cm, minor diameter 10 cm). This chamber was placed in the magnetic system of a sectionalized solenoid which generates a quasistationary field (maximum field strength $\sim$3000 oe, half-cycle $\sim$2$\cdot$10^{-3} sec). Two spark sources were used for plasma injection located in the plane of the torus at one azimuth (ϕ = 0). The injectors give different directions for the initial velocity of the plasma stream: for the inside injector, v_{pl} is parallel to ∇H^2; for the outside injector, v_{pl} is antiparallel to ∇H^2. The plasma flux in this trap was measured by screened electric probes at ϕ = 45 and 135°. It was found that the flow of the plasma injected from

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L 01292-66

ACCESSION NR: AP5021732   15

the outside source at 45° azimuth has a bell-shaped distribution with a maximum
shifted toward the outside. When the plasma is injected from the inside source, the
number of particles which pass the 45° azimuth is considerably less than for the
outside source, and the distribution corresponds to the ordinary distribution of a
plasma in a toroidal magnetic field due to toroidal drift. With continued motion in
the toroidal field, the plasma "drifts" to the outside wall of the chamber. This is
probably due to the effect of the conductive boundary of the chamber. Graphs are
given for the particle distribution. "In conclusion, the authors consider it their
pleasant duty to thank M. S. Rabinovich and I. S. Shpigel' for useful consultation,
and N. V. Perov and V. M. Zykov for assistance in preparing and conducting the ex-
periments." Orig. art. has 3 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics
Institute, Academy of Sciences SSSR)

SUBMITTED: 27May65   ENCL: 00   SUB CODE: ME

NO REF SOV: 003   OTHER: 001

Card 2/2

ARUTYUNYAN, E.A.; DZHELEPOV, B.S.; KHOL'NOV, Yu.V.; SHCHUKIN, G.Ye.

Gamma-ray spectrum of Sb^{122}. Izv. AN SSSR. Ser. fiz. 29 no.7:1107-1111
Jl '65.   (MIRA 18:7)

ARUTYUNYAN, E.A.; DZHELEPOV, B.S.; KHOL'NOV, Yu.V.

Spectrum of gamma rays from Ce^{143}. Izv. AN SSSR. Ser. fiz. 29 no.7:
1127-1130 Jl '65.   (MIRA 18:7)

L 25762-66   -EWT(m)/EWP(t)   DIAAP/IJP(c)   JD

ACC NR: AP6016392   SOURCE CODE: UR/0048/65/029/007/1107/1111

AUTHOR: Arutyunyan, E. A.; Dzhelepov, B. S.; Khol'nov, Yu. V.; Shchukin, G. Ye.

ORG: none

TITLE: Spectrum of Sb sup 122 gamma-rays

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 7, 1965, 1107-1111

TOPIC TAGS: gamma ray, antimony, gamma spectrum, gamma spectrometer, tin, tellurium

ABSTRACT: In this article are presented an experiment and results from it for the investigation of the γ-ray spectrum of Sb^{122} using the electron output and a magnetic γ-spectrometer for taking the measurements. The energies and intensities of the γ-rays are compared with those obtained by other methods. The data for the first four basic γ-transitions agree with preceding work. The new transitions are compared favorably with Sn^{122} and Te^{122} but with admission of the necessity of further study. It is also noted that the intensities of the β-components at the 1340 and 1095 kev levels may not be taken as accurate. The authors thank V. F. Rodionov and T. I. Sidorova for their assistance with the measurements, and also N. N. Zhukovskiy and A. G. Maloyan for providing instruments for the investigation of a segment of the gamma-ray spectrum of Sb^{122}. Orig. art. has: 3 figures and 1 table. [JPRS]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 004

Card 1/1

L 25760-66   EWT(m)   DIAAP   JD/JG

ACC NR: AP6016394   SOURCE CODE: UR/0048/65/029/007/1127/1130

AUTHOR: Arutyunyan, E. A.; Dzhelepov, B. S.; Khol'nov, Yu. V.

ORG: none

TITLE: Gamma-ray spectrum of Ce sup 143

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 7, 1965, 1127-1130

TOPIC TAGS: cerium, gamma spectrum, gamma spectrometer, sodium, lanthium, radioisotope

ABSTRACT: This article is a presentation of the exact data from an experiment reviewed in brief in an earlier publication. The γ-spectrum of Ce^{143} was investigated using a γ-spectrometer. Five series of measurements were taken with sources having an activity on the order of 1 curie. In the experiment a number of new γ-transitions were detected: 443, 535, 590, 793, 1000, and 1295 kev. All the new transitions, with the exception of 443 and 793 kev, require the introduction of additional levels. It was also noted that during the experiment isotopes Na^{24} and La^{140} were detected, measured throughout the energy range, and excluded from the Ce^{143} spectrum. The authors thank G. Ye. Shchukin, T. I. Sidorova and V. F. Rodionov for their assistance with the measurements. Orig. art. has: 2 figures and 1 table. [JPRS]

SUB CODE: 20, 18 / SUBM DATE: none / ORIG REF: 003 / OTH REF: 003

Card 1/1

L 09229-67   EWT(m)/EWP(t)/ETI   IJP(o)   JD/JG
ACC NR: AP7002792   SOURCE CODE: UR/0048/66/030/008/1253/1259

AUTHOR: Arutyunyan, E. A.; Vrzal, Ya.; Dzhelepov, B. S.; Liptak, Ya.; Urbanets,
Ya.; Khol'nov, Yu. V.

ORG: none

TITLE: Gamma ray spectrum of Ce sup 143

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 8, 1966, 1253-1259

TOPIC TAGS: gamma radiation, gamma spectrum, radioactive decay, radioisotope,
cesium

ABSTRACT: The -radiation of Ce^{143} was investigated with the aid of a Ge(Li)-
spectrometer. Detector characteristics: depth of sensitive layer 6 mm; working
volume, 5 cm^3; half-width of the -lines of Co^{60}, 4 kev. The source was prepared
by the (n) reaction of a specimen of Ce^{142} enriched to 89.7%. The -spectrum was
measured over the energy range of up to 2000 kev with the aid of 512- and 2048-
channel pulse analyzers, the average exposure time being three hours. The values
obtained for the energies and relative intensities of the -rays of Ce^{143} are
tabulated. Twenty-six -lines were obtained. The finds are generally in agreement
with the findings of other investigators. Major difference in intensities are
observed for the transitions with energies of 372, 587, 795, (triple line), and
936 kev, however. The transitions E = 372, 500, 556, 804, 1000, 1029, 1044, 1058,
1325 kev do not fit in the scheme of Pr^{143} proposed by Gopinathan et al. (Phys.
Card 1/2

L 09229-67
ACC NR: AP7002792

Rov., 136, 1247 (1964)) (measurements with scintillation spectrometers). The scheme of the decay of Co^{143} will bo discussed later. "The authors are indebted to L. N. Moskvin for chemical purification of the preparation and to T. I. Sidorova, for assistance in analyzing the findings." Orig. art. has: 4 figures and 1 table. [JPRS: 39,040]

SUB CODE: 20,18 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002

2/2

L 09236-67   EWT(m)/EWT(t)/ETI   IJP(c)   JD/JG
ACC NR: AP7002793   SOURCE CODE: UR/0048/66/030/008/1260/1264

AUTHOR: Arutyunyan, E. A.; Vizal, Ya.; Dzhelepov, B. S.; Liptak, Ya.; Urbanets,
Ya.; Khol'nov, Yu. V.

ORG: none.

TITLE: Gamma ray spectrum of ND sup 147

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 8, 1966, 1260-1264

TOPIC TAGS: gamma spectrum, pulse analyzer, gamma spectrometer

ABSTRACT: The γ-ray spectrum of Nd^{147} was investigated with the aid of a Ge(Li)-
detector built in the Prague Institute of Solid-State Physics. The spectrum was
recorded by means of 2048- and 512-channel pulse analyzers. The Nd^{147} source was
obtained from enriched Nd^{146} with the aid of the reaction $Nd^{146}(n,\gamma)Nd^{147}$. Four
series of measurements with an average exposure time of 3 hr were carried out.
Findings: The intensities of all γ-lines decrease in time with a period equal to
the half-life of Nd^{147}. The recorded intensities and energies of the γ-rays of
Nd^{147} were tabulated and compared with the E_{γ} and I_{γ} obtained by means of a magnetic
γ-spectrometer, a scintillation spectrometer, and a β-spectrometer of the $\pi\sqrt{2}$ type.
Peaks corresponding to the γ-transitions at 542, 590, 610, 622 kev could be plotted
for the first time. The presence of 310-kev γ-rays corresponding to the transition
$720 \rightarrow 410$ kev, which was observed by Gunye et al. (Saraf. Phys. Rev., 124,

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L 09236-67
ACC NR: AP7002793

172 (1961)), could not be confirmed (the intensity of the corresponding quanta was below 0.2 of the intensity of the transition $E\gamma = 531$ kev). "The authors are indebted to L. N. Moskvin for chemical purification of the preparation $[Nd^{147}$ source] and to T. I. Sidorova for assistance in analysing the findings." Orig. art. has: 3 figures and 1 table. [JPRS: 39,040]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 001 / OTH REF: 002

KHOLNOVA, V I .

137-58-1-1841

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 250 (USSR)

AUTHORS: Fridlyander, I.N., Khol'nova, V.I.

TITLE: A Method of Obtaining Special Electrical Properties in Aluminum
            Alloys by a Continuous Casting of Thin Sheet Blanks (Metod
            polucheniya osobykh elektricheskikh svoystv alyuminiyevykh
            splavov putem nepreryvnoy otlivki tonkoy listovoy zagotovki)

PERIODICAL: V sb.: Metallurg. osnovy lit'ya legkikh splavov. Moscow,
            Oborongiz, 1957, 394-399

ABSTRACT: An installation has been developed for continuous production
            of 6-12 mm strip from an alloy of Al containing 3-3.5 Mn. The
            metal is extruded through a narrow aperture in the furnace onto
            a moving screen cooled by water from beneath. Quenching from
            the liquid state occurs, as a result of which a solid solution of
            Mn and Al, oversaturated from the liquid phase, is formed. The
            casting temperature varies within the 800-840° interval, and
            undesirable primary inclusions of intermetallic compounds appear
            when the temperature is lowered. Subsequent cold rolling to a
            thickness of 0.5 mm did not cause decomposition of the solid
Card 1/2   solution. The resultant sheet had a σ_b of 33-37 kg/mm^2 and

137-58-1-1841

A Method of Obtaining Special Electrical Properties in Aluminum Alloys (cont.)

δ = 2-3 percent. Measurement of the electrical properties showed that in 0-200° interval, the temperature dependence of resistivity α is low and virtually invariable (apx. 0.9 x 10^{-3} ohm/1 C), and the resistivity is 0.110 ohm/mm^2/m. Heating to 300° and higher results in a reduction in resistivity and an increase in its temperature dependence.

P.N.

1. Aluminum alloys--Electrical properties--Processes

Card 2/2

ACCESSION NR: AT4037653   S/2981/64/000/003/0120/0135

AUTHOR: Tulyankin, F. V.; Khol'nov, V. I.; Golovinov, M. F.; Uzenev, Ye. K.; Komkov,
P. F.; Zinov'yev, V. K.; Ayupova, Yo. O.; Andreyev, A. D.

TITLE: Effect of technological factors on the structure and properties of forgings from
alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable
alloys), 120-135

TOPIC TAGS: aluminum alloy, alloy V93, forgeable alloy, alloy casting process, alloy
forging process, ingot mechanical property, forging mechanical property, ingot structure,
forging deformation, ingot reheating, iron content, forging temperature, casting temperature

ABSTRACT: The authors report on the technological development of optimal processes for
continuous casting of ingots with diameters up to 800 mm from the recently developed alloy
V93 (aluminum based, 0.8-1.2% Cu, 1.6-2.2% Mg, < 0.1% Mn, 0.15-0.4% Fe, ≤ 0.02% Si,
6.5-7.5% Zn and ≤ 0.1% Ti) and for the further processing of ingots into forgings weighing
up to 2000 kg. The casting process involved secondary refining of melt in the mixer with
molten cryolite flux (3 kg/ton) and crushed magnesite filtration between mixer and mold to
remove non-metallic impurities. Ingots were homogenized for 50-55 hrs at 470C immediately
after casting. The structure of all ingots was fine-grained and homogeneous. Coarse grain
areas were found peripherally in larger ingots, but proper selection of mold and cooling

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ACCESSION NR: AT4037653

water pressure limited such graining to machining tolerance areas. Forging involved double or triple redrawing and upsetting. It was found that mechanical properties did not vary significantly across the given range of deformation (ingot diameter = 500 mm to pieces 140, 220 and 325 mm thick); however, the strength of the forged pieces was somewhat lower when forged from ingots with diameter = 800 mm at equal deformation levels. The best hardening temperature was 470 ± 5C the optimal forging process involved 12-15 hrs. preheating to a starting forging temperature of 440-380C and a final 320C. "V. P. Manuylov, Yu. M. Saratovtsev, F. P. Verbovoy, Yu. P. Snetkova, A. G. Slobtsov, Z. N. Cherny*kh, N. D. Vinokurov, F. F. Andrianov, Ye. S. Volkov, I. Ya. Zal'tsman, V. G. Kovrizhny*kh and others also took part in the work." Orig. art. has: 13 graphs and 7 tables.

ASSOCIATION: none

SUBMITTED: 00   DATE ACQ: 04Jun64   ENCL: 00

SUB CODE: MM   NO REF SOV: 001   OTHER: 000

Card 2/2

ACCESSION NR: AT4037654   S/2981/64/000/003/0136/0144

AUTHOR: Khol'nova, V. I.; Kovrizhny*kh, V. G.; Yelagina, Z. A.

TITLE: A study of large stampings from alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 136-144

TOPIC TAGS: aluminum alloy, alloy V93, alloy stamping, alloy heat treatment, alloy mechanical property, alloy corrosion resistance

ABSTRACT: The report concerns the effects of production technology on the properties of, large pieces (300 x 460 x 1026 mm) stamped at 350-430°C from ingots of alloy V93 (6.92-7.22% Zn, 1.93-2.06% Mg, about 1.0% Cu, 0.23-0.34% Fe, 0.12-0.15% Si, traces of Mn and Cr). The ingots were homogenized 36 hours at 445-465C and stamping followed forging at 350-420C (after preheating to 380-420C). Tests indicate tensile strength averaging 50.3-54.5 kg/mm^2 in three directions, yield 48.8-53.5 kg/mm^2, elongation 3.3-7.8% — depending on direction and area of stamping. Samples were quenched in hot water (75-85C) from 470C and aged 3 hours at 120C, then 4 hours at 165C. Tensile strength is not reduced by quenching in hot water; however, elongation deteriorates if the water temperature exceeds

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ACCESSION NR: AT4037654

85C.   Corrosion tests were satisfactory, results approximating those for alloy V95.   Warping was well within tolerance limits and it is concluded that parts can be heat treated after final mechanical operations by providing 2-3 mm machining allowances for special fits.   "N. D. Vinokurov, F. F. Andrianov, I. Ya. Zal'tsman, Ye. S. Volkov, M. A. Vasilevskaya, N. K. Komarova and V. A. Klimova also took part in the work."   Orig. art. has: 4 tables and 7 graphs.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AT4037655   S/2981/64/000/003/0145/0152

AUTHOR: Fridlyander, I. N.; Khol'nova, V. I.; Yelagina, Z. A.

TITLE: Effect of iron and silicon admixtures on the microstructure of alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy* ye splavy* (Malleable alloys), 145-152

TOPIC TAGS: aluminum alloy, alloy V93, alloy microstructure, hot pressed aluminum alloy, heat treated aluminum alloy, alloy grain growth, iron admixture, silicon admixture

ABSTRACT: Ingots (diameter 70 mm) were dip-cast, then homogenized (48 hrs., 445-465C) and eventually pressed into strips (cross section 10x40 mm) after preheating for 3 hours at 400-415C, to study the effect of Fe and Si concentration on alloy microstructure. The numerous tested compositions were all based on Al (grade AV000) and contained 5.7-7.03% Zn, 1.41-1.96% Mg, 0.77-1.68% Cu, traces to 0.31% Si and 0.073-0.5% Fe. Samples were either hot pressed or heat treated (water quenched from 470 ± 5C, aged 3 hours at 120C and 4 hours at 165C). Increase of Fe to levels above 0.10% results in a finer grained and more equant structure of hot pressed samples. The heat treated material showed significantly reduced grain size and greater homogeneity with an increase in Fe.

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ACCESSION NR: AT4037655

It is concluded that ferrous components can act as recrystallization nuclei and that Fe can inhibit grain growth by forming a supersaturated solid solution in the Al. Orig. art. has: 1 table and 11 photomicrographs.

ASSOCIATION: none.

SUBMITTED: 00   DATE ACQ: 04Jun64   'ENCL: 00

SUB CODE: MM   NO REF SOV: 000   OTHER: 000

Card   2/2

ACCESSION NR: AT4037656   S/2981/64/000/003/0153/0158

AUTHOR: Khol'nova, V. I.; Dzevoyed, A. A.; Kuznetsova, K. N.; Yelagina, Z. A.

TITLE: Effect of various heat treatment procedures on the mechanical properties of alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 153-158

TOPIC TAGS: aluminum alloy, aluminum zinc magnesium alloy, alloy heat treatment, alloy aging, alloy mechanical property, alloy corrosion resistance, quenching medium, aging temperature, aging period, interrupted aging

ABSTRACT: Forgings 200 and 300 mm thick, from ingots (diameter 650 or 860 mm) of alloy V93 (1.03% Cu, 1.86% Mg, 0.30% Fe, 7.3% Zn, less than 0.01% Si, Al based), served as the source of samples quenched from 470 ± 5C (25 min. in a niter bath) in cold or boiling (96C) water, as well as in cold and preheated (76C) oil. Interrupted aging involved 3 hrs. at 120C plus 4 hrs. at 165 ± 5C. Other samples were quenched in boiling water (94-96C) after 70 min. at 470 ± 5C, then aged in two stages: stage I at 100 or 120C, stage II at temperatures ranging by 5° intervals from 160 to 180C. Aging periods were 1, 2, 3, 4 and 5 hrs. at each temperature. Results indicate that quenching in hot water produces only

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ACCESSION NR: AT4037656

insignificant reductions in strength and this is deemed valuable in reducing stresses inside the piece. Best aging procedure from the standpoint of mechanical properties was at 100 plus 170C or 120 plus 170C, for 3 hour periods in each case. From the standpoint of corrosion resistance, aging for 3 hours at 120C plus 4 hours at 165 ± 5C was found to be optimal. Orig. art. has: 4 graphs and 2 tables.

ASSOCIATION: none

SUBMITTED: 00   DATE ACQ: 04Jun64   ENCL: 00

SUB CODE: MM   NO REF SOV: 000   OTHER: 000

Card 2/2

KHOLNOVA, Ye. A.

"Calorimetric Method of Measuring the Activity of Radioactive Products."
Cand Tech Sci, All-Union Sci Res Inst of Metrology, Leningrad, 1954. (RZhFiz,
Feb 55)

SO: Sum. No. 631, 26 Aug 55 – Survey of Scientific and Technical Dissertations
     Defended at USSR Higher Educational Institutions (14)

Khol'nova, Ye. A.

USSR/Physics - Instruments

Card 1/1   Pub. 22 - 9/48

Authors   : Aglintsev, K. K., and Khol'nova, E. A.

Title   : Calorimetric measurement of activity and number of gamma-quanta per act of decomposition

Periodical : Dok. AN SSSR 98/3, 357-360, Sep 21, 1954

Abstract   : The construction and application of two types of calorimeters, intended for absolute measurements of beta- and gamma radiation intensities of radioactive substances, are described. The technical details and mode of operation of the gamma- and beta-calorimeters are listed. The suitability of the calorimetric method, for the determination of numbers of gamma quanta per act of decomposition, is explained. A calculation method, capable of determining the fraction of gamma-ray energy absorbed in the calorimeter, is presented. Four references: 3-USA and 1-USSR (1948-1952). Table; drawings; graph.

Institution : The D. I. Mendeleyev All-Union Scientific Research Institute of Metrology

Presented by : Academician P. I. Lukirskiy, April 26, 1954

KHOL'NOVA, YE.A.

USSR / Isotopes.   B-7

Abs Jour   : Ref Zhur - Khimiya, No 8, 1957, 26057

Author   : K.K. Aglintsev, F.M. Karavayev, A.A. Konstantinov, G.P.
              Ostromukhova, Ye.A. Khol'nova.

Inst   : All-Union Scientific Research Institute of Metrology
Title   : Standardization of Radioactive Preparations.

Orig Pub   : Atom energiya, 1956, No 2, 55 - 62

Abstract   : Methods and apparatus used at the All-Union Scientific Re-
              search Institute of Metrology for the measurement of the
              monitoring characteristics of radioactive preparations
              are described. The measurement of the γ -equivalent is
              done with two calibrated installations consisting of io-
              nization chambers and electrometric appliances; one of
              these installations is reserved for measuring the γ -e-
              quivalents of 1 to 1,000 mg-equ. of Ra with the accuracy
              of from 1 to 8%. Absolute activity measurements are car-
              ried out by counters with solid angles of 4π (the measu-
              rement limit is from 5×10^{-7} to 5×10^{-11} curie) with

Card   : 1/2

KHOLNOVA, YE M.

Standardization of radioactive preparations. K. K. Aglintsev, E. M. Kamzaev, A. A. Konstantinov, O. P. Ostromukhova, and E. A. Kholnova. Atomic Energy (U.S.S.R.) (English translation) 4, No. 8, Pub. in Nuclear Energy 3, 347, 50, 356,, — Description of various standardization methods used.

KHOL'NOVA, Ye.A.

SOV/112-59-3-5251

21(3)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, p 135 (USSR)

AUTHOR: Aglintsev, K. K., Balon, Z. P., Dzhelepov, B. S., Karanayev, F. M., Karamyan, A. S., Konstantinov, A. A., Ostroumhova, G. P., Prokof'yev, P. T., Rusinova, S. A., Sumbayev, O. I., Khol'kova, Ye. A., Shestopalova, S. A., Yudin, M. F., and Yarltsyna, I. A.

TITLE: Metrology of Penetrating Radiations
(Metrologiya pronikayushchikh izlucheniy)

PERIODICAL: V sb.: Atomn. energiya v mirnykh tselyakh. Gosenergoizdat, 1957, pp 165-181

ABSTRACT: Projects are described of the Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii (All-Union Scientific-Research Metrology Institute) imeni D. I. Mendeleyev on standardization of measures in the ionizing-radiation field, and on the construction of standard and reference outfits for reproducing the fundamental units in the whole range of energies and intensities of radiations of all types. The following outfits are described: (1) a standard reproducing

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measuring radiations?
the roentgen in the range of 40-300 Kev: (2) a reference outfit for measuring the roentgen of electromagnetic-radiation doses having the quantum energy of in roentgens for measuring in roentgens the electromagnetic 200-1,300 Kev: (3) an outfit for measuring with quantum energy of 3-20 Kev with an error of 1%; (4) two radiation doses with quantum energy of 3-20 Kev with an error of 1%: differential standard outfits for measuring radium gamma-equivalents; (5) differential lead-ball gamma-calorimeters for measuring the activity of various preparations on the basis of their gamma radiation; (6) an isothermal calorimeter operating on the principle of liquid-nitrogen evaporation for measuring the activity of beta preparations: (7) a differential alpha-calorimeter for measuring the activity of radium preparations. An activity-measurement method by counting the number of particles emitted by a preparation is being developed in two directions: counting of particles in a definite solid angle and the same in the total solid angle by means of "4π-counters." The beta-particle counter with a definite angle permits measuring preparations with an activity of $10^{-9} \cdot 10^{-5}$ curie with an error of 4-6%. Two alternate designs of "4π-counter...

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SOV/112-59-3-5251

Metrology of Penetrating Radiations

counters" are described. One of them permits measuring beta preparations with an activity of $10^{-10} \cdot 5 \times 10^{-5}$ curie with an error of 2-4%, and the second $5 \times 10^{-11} - 5 \times 10^{-7}$ curie with an error of 1-3%. The outfits have been built for measuring neutron streams from 10^8 down to a few tens of neutrons per sec. A gamma-spectrometer "Electron" with an improved focusing has been built for investigation of gamma spectra in the energy range of 600-1,000 Kev. To conduct investigation in the range of 120-1,300 Kev, a 2-meter long crystal diffraction gamma spectrometer of the Du... spectrometer type has been built. Also, a magnetic spectrometer Analyzer's photoelectrons has been built for the range of 200-700 Kev. Measuring the half-life from a few hours to a few years is made by two methods: the method of successive measurements of gamma-equivalent preparations and the differential-chamber method. The results of half-life measurements for a number of isotopes are tabulated.

N.G.Z.

Card 3/3

KHOL'NOVA, Ye.A.

Isothermic calorimeter for measuring the activity of beta radiators. Trudy VNIIM no.30:18-24 '57.   (MIRA 12:1)
(Beta rays--Measurement)   (Calorimeters)

AGLINTSEV, K.K.; KHOL'NOVA, Ye.A.

Differential calorimeter for measuring the activity of pre-
parations according to gamma radiation. Trudy VNIIM no.30:25-
36 '57.   (MIRA 12:1)
        (Calorimeters)   (Gamma rays--Measurement)

KOLUPAVA. Ye.A, KARAVAYEV, F.M., AGLINTSEV, K.K., BELOK, I.L., KONSTANTINOV, A.A.,
OSTROMUKHOVA, G.P., Leningrad

    "Standardizing X-Ray and nuclear radiation" (Section X)

report submitted for Measurement and Automation, Scientific Society for (Hungarian)
Intl Measurements Conference - Budapest, Hungary, 24-30 Nov 58

AUTHOR: Khol'nova, Ye. A.   SOV/48-22-7-18/26

TITLE: Determination of γ-Quanta Number per Decay Process of La^{140}

(Opredeleniye chisel γ-kvantov na raspad La^{140})

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 7, pp. 848-849 (USSR)

ABSTRACT: This method of the experimental determination of the number of γ-quanta per decay process is based upon the calorimetric measurement of the heat liberated in the absorption of β- and γ-rays (which are emitted by the investigated isotopes). This method, which is taken from reference 1, is described. Two formulae are given: (3) and (4). Their application permits to find directly the number of γ-quanta per decay process for a line the relative intensity of which is assumed as being equal to unity. The number of γ-quanta per decay process for other lines can be found from relation (1). In the investigation of La^{140} the energies and relative intensities of the γ-lines found in the "ritron" of Prikhodtseva and Khol'nov (Ref 2) were used. The average energy of the β-particles were taken from the spectrum of La^{140}, which was

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obtained with the "ketron" of the Leningrad State University.
The average energy was 445 keV. The energy emitted by the
La^{140} preparation as β- and γ-radiation was measured with
the calorimeters of the VNIIM (Ref 4). By using the spectro-
scopic characteristics the number of γ-quanta per decay pro-
cess was determined for the most intensive γ-line with 1597 keV,
the relative intensity of which, being assumed as equal to
unity in reference 2,was 0,95. After the number of γ-quanta
for the other lines was determined as described above, the
energies were multiplied with the respective numbers of γ-quanta
per decay process. The results of all γ-lines were added. Thus
the energy emitted in one decay process in the form of γ-ra-
diation was found. It came out as 2200 keV. As the relative
intensities of the β-components and their limiting energies
were known, the average total energy of the β-particles per
decay process was determined. It was 1310 keV. Hence, the
total energy per decay process equals 3510 keV, that is to
say, by 300 keV less than in the existing decay schemes.
Hence it is concluded that the relative intensities taken
from reference 5 by the author are inaccurate. This error,
however, has no effect on the accuracy of the determination

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of the number of γ-quanta per decay process, as a decomposition of the β-spectrum into components was not necessary.
L. P. Timofeyeva assisted in a number of measurements and computations. There are 1 table and 5 references, 4 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva
(All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)

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AGLINTSEV, K.K.; KARAVAYEV, F.M.; KARAMYAN, A.S.; KONSTANTINOV, A.A.;
     OSTROMUKHOVA, G.P.; KHOL'NOVA, Ye.A.; YUDIN, M.F.; YARITSYNA, I.A.

Achievements in the methrology of ionizing radiation and prospects
for its development. Trudy.VNIIM no.33:135-158 '58.
                                             (MIRA 11:11)

1. Rukovoditel' otdela ioniziruyushchikh izlucheniy Vsesoyuznogo
nauchno-issledovatel'skogo instituta metrologii imeni D.I.Mendeleyeva
(for Aglintsev).
                          (Radiation--Standards)

SOV/115-59-2-29/38

21(8)

AUTHOR: Aglintsev, K.K., Ostromukhova, G.P., Khol'nova, Ye.A.

TITLE: Determining the Process of Air Ionization for Co^{60}
             Gamma Radiation (Opredeleniye raboty ionizatsii v
             vozdukhe dlya gamma-izlucheniya Co^{60})

PERIODICAL: Izmeritel'naya tekhnika, 1959,   Nr 2, p 52 (USSR)

ABSTRACT: The author believes that there is a lack of information
             so far on the importance of ionization in the field of
             hard gamma radiation. Tests were made to determine the
             value of ionization in the air for Co^{60} gamma radiation.
             This was found by measuring the same preparation Co^{60} m
             with the help of a normal ionization chamber to ascer-
             tain the number of ion elements and of gamma calori-
             meters, which give the value of the absolute activity of
             this preparation. Tests with four different Co^{60} pre-
             parations showed that the mean value of ionization
             equaled $33.7 = 1.5$ ev. There are 5 references, 3 of
             which are Soviet and 2 English.

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B021/B058

AUTHORS: Aglintsev, K. K., Ostromukhova, G. P., and Khol'nova, Ye.A.

TITLE: Measurement of the Gamma Constant of Radium

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 12, pp. 40-42

TEXT: Methods and results of the determination of the gamma constant of
radium which were obtained at the VNIIM (Vsesoyuznyy nauchno-issledova-
tel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific
Research Institute of Metrology imeni D. I. Mendeleyev)), are given in this
paper. The values of the γ-constant were determined by measuring the
values of the dose rate and the activity of one and the same preparation,

i.e. $\Gamma(Ra) = \dfrac{P \cdot 3600}{Af}$, P being the dose rate in 1-cm distance from the

preparation, in r/sec; A the activity of the preparation in millicurie,
f the coefficient of correction. Radon preparations were used instead of
radium, in order to exclude errors due to self-absorption of γ-radiation
in the source. The linear attenuation factor of the γ-radiation of radium

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Measurement of the Gamma Constant of Radium   S/115/60/000/012/012/018
                                                   B021/B058

in air was determined experimentally. The measurement results are represented
graphically. The probable errors of quantities involved in the calcula-
tion of the dose rate are listed. The activity of the radon preparations
was determined by the calorimetric method. The greater part of the studies
for determining the γ-constant of radium is based on measuring the dose
rate by means of thimble chambers. Finally it is stated that all measure-
ments made by means of thimble chambers up to the publication of the
theories mentioned, require checking. The dependence of the data on the
conditions of diaphragming is described as being the second error source
in the measurement of the γ-radiation by means of thimble chambers.
Moreover, no method for calculating the correction for scattered radiation
in air is elaborated for thimble chambers. Measurement results of the
γ-constants of radium during filtering by means of 0.5-mm platinum,
obtained by various authors, are mentioned next. According to the authors'
data, this quantity will be 8.04 r/h.mg.cm in the case of an open-air
chamber, if the number of decays per mg radium is assumed as being

$3.68 \cdot 10^7$. Other authors determined the γ-constant at 8.26, 8.16 and
8.4 r/h.mg.cm. There are 1 figure, 1 table, and 16 references: 4 Soviet,
8 US, 2 British, and 1 Canadian.

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21. 6 000

AUTHORS: Timofeyeva, L.P.; Khol'nova, Ye.A.

·TITLE: Calorimetric device for measuring radium preparations

SOURCE: USSR. Komitet standartov, mer i izmeritel'nykh priborov.
Trudy institutov Komiteta, no. 55 (115), Moscow, 1961.
Issledovaniya v oblasti izmereniya ioniziruyushchikh izlucheniy,
5-34

TEXT: A detailed description of the design, theory, calibration, and
operation of a calorimetric device developed at VNIIM and intended for
measuring the absolute activity of α -preparations (particularly radium
preparations) is given. The device can also be used as a β -calorimeter,
in which case the α - glass envelopes are suitably replaced. The measuring
device consists of a β -calorimeter and two independent static-type α -
calorimeters, intended for measuring differently sized radium ampoules.
The device consists of the following basic parts: (1) two copper

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cylinders with the calorimeters; (2) a water thermostat; (3) an electric
device for measuring calorimeter temperature; (4) a potentiometric
system for calorimeter calibration; (5) a system for measuring the
sensitivity of the galvanometer; (6) a device for regulating the liquid
level in the thermostat. The calorimeter design is very similar to that
of a radio balance described by W.B. Mann (Ref. 2: J.Research. NBS, v. 52,
1954, p 177; v. 53, 1954, p 277). The main difference is that, in these
calorimeters, the thermal capacity of the preparation depends on the
exact calibration of the calorimeter involving the use of a definite
power source. The experimerts established that the sensitivity of the
calorimeters permits measuring radium preparations in the 0.1 mc - 1 C
range and measuring β-preparations in the 5-10 mc - 3 C range. An
analysis of the method of measuring the absolute activity of radium
preparations and of the sources of possible errors showed that the error
does not exceed $\pm$ 0.8±1.0%. In this connection, the advantages of abso-
lute calorimetric measurements for determining the activity of non-

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Calorimetric device for measuring...

standard radium preparations are discussed. On the basis of published
data on the energies and intensities of different types of radiation of
equilibrium radium preparations, the authors further calculated the heat
effect from 1 mc of radium and also the correction of RaD, RaE, and
polonium build-up for radium preparations of different ages. They
finally examined the possibility of using the α-calorimeter for relative
measurements of radium preparations. An analysis of the errors of these
measurements revealed that: (1) the error involved in the comparison
does not exceed ± 0.3%; (2) the Ra content in the preparations can be
determined with an accuracy of about ± 0.5%. The individual experiments
carried out with α-calorimeters were as follows: (1) absolute and
relative measurements of a standard radium preparation made in the GDR;
(2) measurement of the absolute activity of a set of highly active
standard radium preparations; (3) comparative study of four radium
gages. There are 6 figures, 11 tables, and 8 references: 5 Soviet and
3 non-Soviet-bloc. The three English-language references are: W.B. Mann,

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